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EXAMINER	
ONEILL, KARIE AMBER	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/613,681	JIANG ET AL.	
	Examiner	Art Unit	
	Karie O'Neill	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 July 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-67* is/are pending in the application.

4a) Of the above claim(s) *40-67* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-39* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *7-3-03, 6-3-05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Claims 40-67 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on May 22, 2006.

2. Applicant's election with traverse of Group I, Claims 1-39, in the reply filed on May 22, 2006, is acknowledged. The traversal is on the ground(s) that the three groups are not independent and distinct. This is not found persuasive for the following reasons: a) as set forth in the previous office action, Inventions I and II are directed to related products. The related inventions are distinct if the inventions as claimed do not overlap in scope, i.e., are mutually exclusive, the inventions as claimed are not obvious variants', and the inventions as claimed are either not capable of use together or can have a materially different design, mode of operation, function, or effect. See MPEP j 806.05()., and b) Inventions II and III are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP j 806.05(c)).

Applicant has not convincingly traversed this requirement.

Thus the search for the method is not coextensive with the search for the product and as set forth in the previous office action the product is held to be obtainable from other processes apart from that recited in Group 1.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-39 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. The term "dimensionally stabilized" in Claim 1 is a relative term which renders the claims indefinite. The term "dimensionally stabilized" is not defined in the claim and the specification fails to give a clear definition as to what the instant application recognizes as being "dimensionally stabilized", rendering the term indefinite since the extent of stabilization which falls under this claimed term is not specified.

b. Claims 16, 17, 33 and 34 contain the trademark/trade names CARBOPOL C940 (claims 16, 17, 33 and 34) and WATER-LOCK A-221 (claims 17 and 34). Where a trademark or trade name is used in a claim as a limitation to identify or describe a particular material or product, the claim does not comply with the

requirements of 35 U.S.C. 112, second paragraph. See *Ex parte Simpson*, 218 USPQ 1020 (Bd. App. 1982). The claim scope is uncertain since the trademark or trade name cannot be used properly to identify any particular material or product. A trademark or trade name is used to identify a source of goods, and not the goods themselves. Thus, a trademark or trade name does not identify or describe the goods associated with the trademark or trade name. In the present case, the trademark/trade name is used to identify/describe particular binders and, accordingly, the identification/description is indefinite.

c. Claim 8 recites the limitation "step (d) in line 3. There is insufficient antecedent basis. Claim 9 is directly dependent upon Claim 5, which is directly dependent upon Claim 1. Claims 1 and 5 fail to recite steps c or d, rather such steps are recited in claim 2. Therefore Claim 8 lacks antecedent basis for "step (d)" since no step is recited in Claim 8.

d. Claim 9 recites the limitation "said second fluid" in line 2. There is insufficient antecedent basis for this limitation in the claim. Claim 9 is directly dependent upon Claim 8, which is directly dependent upon Claim 5, which is directly dependent upon Claim 1. Claims 1, 5 and 8 fail to recite a "second fluid", rather such steps are recited in Claim 2. Therefore claim 9 lacks antecedent basis for a "second fluid" since there is no "second fluid" in any of Claims 1, 5, 8 and 9.

e. Claims 21 and 39 recite the limitation "the approximate shape of the anode cavity" in line 2. There is insufficient antecedent basis for this limitation in the claim.

f. Regarding Claim 22, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations flowing the phrase are part of the claimed invention. See MPEP §2173.05(d). See step (a), which recites a binder comprising an alcohol, such as polyvinyl alcohol.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 3, 5, 6, 7, 11 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Une (JP 56-116270).

With regard to Claims 1, 5-7, Une discloses in the abstract, a method of forming an anode for a zinc/air cell comprising the steps of forming a mixture comprising zinc, water, a binder and PVA. The mixture is first molded before drying. Although the term "dimensionally stabilized" is not used in the abstract, it is held that upon drying, a "dimensionally stabilized mass" comprising zinc particles, is produced.

With regard to Claim 3, Une discloses in the abstact, the fluid being water.

With regard to Claim 11, Une discloses in the abstract, the mixture can be stored in air.

With regard to Claim 21, Une discloses in the abstract, the mixture being placed in a mold before it is dried and that is how the electrode is obtained.

7. Claims 1, 3, 6, 7, 11, 13 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Kosta et al. (US 3,784,406).

With regard to Claim 1, Kosta et al. discloses a method of forming an anode for a zinc/air cell comprising the steps of forming a mixture of zinc particles, a polymeric binder dispersed in water which is subsequently dried (column 5 lines 1-12). Although the term "dimensionally stabilized mass" is not used it is held that upon drying, a "dimensionally stabilized mass" comprising zinc particles, is produced. For example, in Figure 2, each electrode is deposit (20) is held to be a "dimensionally stabilized mass". The binder acts to glue the zinc particles together within the mass.

With regard to Claim 3, Kosta et al. discloses the fluid is water.

With regard to Claim 6, Kosta et al. discloses in Figures 1 and 2, the electrodes are solid masses. In addition, by putting the masses through a drying oven the masses are heated to a dried solid form. Kosta et al. also discloses that the electrode has pores, therefore, the electrode is a solid porous mass comprising the aforementioned zinc particles (column 3 lines 1-13).

With regard to Claim 7, Kosta et al. discloses the mass being shaped prior to introducing the mass into the drying oven (column 4 lines 1-12).

With regard to Claims 11 and 13, Kosta et al. discloses the mixture being store in air and being passed through an oven to dry the mixture and thus the drying is performed by heating the mass (column 5 lines 10-12).

With regard to Claim 21, Kosta et al. discloses the mixture being molded into the shape of the anode cavity of the zinc/air cell (column 5 lines 6-8).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 2, 4, 8-10 and 14-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kosta et al. (US 3,784,406) in view of Lin et al. (US 6,300,011 B1).

Kosta et al. discloses the method of forming an anode for a zinc/air cell as described in paragraph 7 above, but does not disclose the method of inserting the dimensionally stabilized mass into the zinc/air cell and adding a second fluid to said mass and the second fluid is absorbed into the mass to form the anode. He does not disclose the second fluid comprising an aqueous alkaline electrolyte, the mass being inserted into the anode cavity before the second fluid is added, the mass expanding as the second fluid is absorbed therein, the alkaline electrolyte being potassium hydroxide,

and the drying step effected by heating said mixture. Kosta et al. also does not disclose the binder further comprising a cross linked acrylic acid polymer gelling agent, the gelling agent comprising a starch graft copolymer of polyacrylic acid and polyacrylamide, the binder further comprising CARBOPOL C940 and a mixture of CARBOPOL C940 and WATER-LOCK A221 starch graft copolymer, and the mixture further comprising indium in total amount between about 200 and 1000 ppm of the zinc.

With regard to Claims 2, 4 and 10, Lin et al. discloses inserting dimensionally stabilized mass into a zinc/air cell (column 6 lines 10-13); and adding a second fluid of potassium hydroxide to said mass in said cell whereby the potassium hydroxide is absorbed into said mass to form an anode (column 6 lines 45-48). Therefore, it would have been obvious to one of ordinary skill in the art to use potassium hydroxide as the electrolyte absorbed into the mass to form the anode of Kosta et al., because the Lin et al. reference teaches the electrolyte being added to a dry mixture in order to make a wet anode.

With regard to Claim 8, Lin et al. discloses the dry powder mix of particulate zinc and the gellant being first placed into the anode casing and the electrolyte solution added after to form the wet anode mixture. Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to add the electrolyte after the mass of Kosta et al. has been inserted into the anode cavity, because Lin et al. teaches that this is an alternate method of making the anode.

With regard to Claim 9, the addition of the second fluid of an aqueous alkaline electrolyte to the anode having a gelling agent therein will absorb the electrolyte and

water and effectively swell upon the addition of the electrolyte. The resultant process will obviously result in an expansion of the anode.

In providing a swelling agent to the anode, it would have been obvious to first insert the anode into the zinc/air cell prior to the addition of the electrolyte solution into the anode. If the anode is inserted into the cell before the electrolyte is added, this optimizes the spatial relationship between the anode in the cell, as well, swelling of the anode predisposed in the cell improves contact between the anode, separator and cathode.

With regard to Claims 14-17, Lin et al. discloses the binder further comprising a crosslinked acrylic acid copolymer gelling agent available under the designation CARBOPOL C940 (column 6 lines 36-37) and a starch graft copolymer available under the designation WATER-LOCK A221 (column 6 lines 33-35). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the binder comprising CARBOPOL C940 and WATER-LOCK A221 with the anode of Kosta et al., because the Lin et al. reference teaches these gellants as being well known in the art and insoluble in alkaline electrolytes.

With regard to Claim 18, Lin et al. discloses the mixture further comprising indium in total amount between about 100 to 1000 ppm of the zinc (column 6 lines 17-21). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the zinc indium alloy in the mixture of the Kosta et al. anode, because Lin et al. teaches this alloy being essentially comprised of pure zinc and having the electrochemical capacity of pure zinc.

10. Claims 2, 4, 8-10 and 14-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Une (JP 56-116270) in view of Lin et al. (US 6,300,011 B1).

Une discloses the method of forming an anode for a zinc/air cell as described in paragraph 6 above, but does not disclose wherein the mass is inserted into the anode cavity of the zinc/air cell before adding the second fluid.

With regard to Claims 2, 4 and 10, Lin et al. discloses inserting dimensionally stabilized mass into a zinc/air cell (column 6 lines 10-13); and adding a second fluid of potassium hydroxide to said mass in said cell whereby the potassium hydroxide is absorbed into said mass to form an anode (column 6 lines 45-48). Therefore, it would have been obvious to one of ordinary skill in the art to use potassium hydroxide as the electrolyte absorbed into the mass to form the anode of Une, because the Lin et al. reference teaches the electrolyte being added to a dry mixture in order to make a wet anode.

With regard to Claim 8, Lin et al. discloses the dry powder mix of particulate zinc and the gellant being first placed into the anode casing and the electrolyte solution added after to form the wet anode mixture. Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to add the electrolyte after the mass of Une has been inserted into the anode cavity, because Lin et al. teaches that this is an alternate method of making the anode.

With regard to Claim 9, the addition of the second fluid of an aqueous alkaline electrolyte to the anode having a gelling agent therein will absorb the electrolyte and

water and effectively swell upon the addition of the electrolyte. The resultant process will obviously result in an expansion of the anode.

In providing a swelling agent to the anode, it would have been obvious to first insert the anode into the zinc/air cell prior to the addition of the electrolyte solution into the anode. If the anode is inserted into the cell before the electrolyte is added, this optimizes the spatial relationship between the anode in the cell, as well, swelling of the anode predisposed in the cell improves contact between the anode, separator and cathode.

With regard to Claims 14-17, Lin et al. discloses the binder further comprising a crosslinked acrylic acid copolymer gelling agent available under the designation CARBOPOL C940 (column 6 lines 36-37) and a starch graft copolymer available under the designation WATER-LOCK A221 (column 6 lines 33-35). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the binder comprising CARBOPOL C940 and WATER-LOCK A221 with the anode of Une, because the Lin et al. reference teaches these gellants as being well known in the art and insoluble in alkaline electrolytes.

With regard to Claim 18, Lin et al. discloses the mixture further comprising indium in total amount between about 100 to 1000 ppm of the zinc (column 6 lines 17-21). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the zinc indium alloy in the mixture of the Une anode, because Lin et al. teaches this alloy being essentially comprised of pure zinc and having the electrochemical capacity of pure zinc.

11. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Une (JP 56-116270), as applied to Claims 1, 3, 5, 6, 7, 11 and 21 above, and in further view of Li (US 5,538,813).

Une discloses method of forming an anode for a zinc/air cell as described in paragraph 6 above, but does not disclose wherein the PVA has a molecular weight between about 85000 and 146000.

Li discloses that PVA binders are known in the art. PVA is commercially available in a wide range of molecular weights and it has been found that PVA obtained from Aldrich Chemical Company in the range of 80,000-140,000 molecular weight is a preferred material. It is to be understood that other molecular weights, such as in the range of 30,000-50,000 or 50,000-80,000 are also useful and other materials with even higher molecular weights may also be advantageously employed. Those of ordinary skill in the art of polymer science will readily understand that higher molecular weight polymers tend to be more structurally sound, whereas lower molecular weight polymers tend to be less rigid and more flexible (column 3 line 66 through column 4 line 8).

The selection of the desired MW of a PVA binder is dependent upon the extent to which the resultant structure is to be rigid or flexible.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Une by selecting the PVA molecular weight to be within a range from 30,000-140,000 or more or less dependent upon the desired degree of rigidity or flexibility of the resultant product. Generally,

differences in ranges will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such ranges is critical. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). *In re Hoeschele*, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969). Furthermore to provide for the desired elastic solids taught by each of JP '690 and JP 1260, and in light of the teaching of Li with respect to how the molecular weight of PVA affects the flexibility/rigidity of a solidified object using PVA as a binder, one of ordinary skill in the polymer art would have recognized that PVAS having a MW between 85,000 and 146,000 would have provided suitable binder materials for the zinc anode to provide a molded solid having a degree of flexibility.

12. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kosta et al. (US 3,784,406), as applied to Claims 1, 3, 5, 6, 7, 11 and 21 above, and in further view of Chalilpoyil et al. (US 5,401,590).

Kosta et al. discloses the method of forming an anode for a zinc/air cell described in paragraph 7 above, but does not disclose wherein the mixture further comprises a surfactant and said surfactant comprises an organic phosphate ester.

Chalilpoyil et al. discloses in column 5 lines 38-41, the use of a surfactant available under the designation GAFAC RA600 organic phosphate ester surfactant. The motivation for adding an organic phosphate ester surfactant to a zinc anode is to reduce hydrogen evolution at the anode. Therefore, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the

teachings of Kosta et al. by adding an organic phosphate ester surfactant to the zinc anode since it would have reduced the evolution of gases, such as hydrogen, at the anode. The selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in Sinclair & Carroll Co. v. Interchemical Corp., 325 U.S. 327, 65 USPQ 297 (1945) See also *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960). MPEP j 2144.07.

13. Claims 22, 23, 26-27 and 30-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Une (JP 56-116270) in view of Lin et al. (US 6,300,011 B1).

With regard to Claims 22 and 26, Une discloses in the abstract, a method of forming an anode for a zinc/air cell comprising the steps of forming a mixture comprising zinc powder, a binder of PVA, and water. After the mixture made it is placed in a mold before it is dried, where the drying vaporizes the water therein. Although the term "dimensionally stabilized" is not used in the abstract, it is held that upon drying, a "dimensionally stabilized mass" comprising zinc particles, is produced.

Une does not disclose the method step of inserting the mass into the anode cavity of a zinc/air cell and adding fluid, comprising aqueous alkaline electrolyte of potassium hydroxide, to the anode cavity whereby said fluid is absorbed by said mass, expands as the fluid absorbs therein and thereby forms the anode. He does not disclose the binder further comprising a gelling agent, binder further comprising a crosslinked acrylic acid polymer gelling agent, specifically CARBOPOL C940, and gelling agent further comprising a starch graft copolymer of polyacrylic acid and

polyacrylamide, specifically WATER-LOCK A221. Une also does not disclose wherein prior to drying the mixture comprises indium in total amount between about 200 and 1000ppm of the zinc.

With regard to Claims 22, 23 and 27, Lin et al. discloses inserting the dimensionally stabilized mass into a zinc/air cell (column 6 lines 10-13); and adding a second fluid of potassium hydroxide to said mass in said cell whereby the potassium hydroxide is absorbed into said mass to form an anode (column 6 lines 45-48). Therefore, it would have been obvious to one of ordinary skill in the art to use potassium hydroxide as the electrolyte absorbed into the mass to form the anode of Une, because the Lin et al. reference teaches the electrolyte being added to a dry mixture in order to make a wet anode.

With regard to Claims 30-34, Lin et al. discloses the binder further comprising a crosslinked acrylic acid copolymer gelling agent available under the designation CARBOPOL C940 (column 6 lines 36-37) and a starch graft copolymer available under the designation WATER-LOCK A221 (column 6 lines 33-35). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the binder comprising CARBOPOL C940 and WATER-LOCK A221 with the anode of Une, because the Lin et al. reference teaches these gelling agents as being well known in the art and insoluble in alkaline electrolytes.

With regard to Claim 35, Lin et al. discloses the mixture further comprising indium in total amount between about 100 to 1000 ppm of the zinc (column 6 lines 17-21). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the

invention to use the zinc indium alloy in the mixture of the Une anode, because Lin et al. teaches this alloy being essentially comprised of pure zinc and having the electrochemical capacity of pure zinc.

14. Claims 24, 25, 28, 38 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Une (JP 56-116270) in view of Lin et al. (US 6,300,011 B1), as applied to Claims 22, 23, 26, 27 and 30-35 above, and in further view of Kosta et al. (US 3,784,406).

Une and Lin et al. disclose the method of forming an anode for a zinc/air cell as described in paragraph 13 above, but do not disclose wherein the dimensionally stabilized mass is a solid porous mass comprising zinc particles, the solid porous mass expands as fluid is absorbed therein, the drying step (b) is effected by heating, the solid porous mass is storable in ambient air and the mixture is molded into the approximate shape of the anode cavity of a zinc/air cell prior to drying said mixture.

Kosta et al. discloses a method of forming an anode for a zinc/air cell comprising the steps of forming a mixture of zinc particles, a polymeric binder dispersed in water which is subsequently dried (column 5 lines 1-12). Although the term "dimensionally stabilized mass" is not used it is held that upon drying, a "dimensionally stabilized mass" comprising zinc particles, is produced. For example, in Figure 2, each electrode is deposit (20) is held to be a "dimensionally stabilized mass". With regard to Claim 24, Kosta et al. discloses in Figures 1 and 2, the electrodes are solid masses. In addition, by putting the masses through a drying oven the masses are heated to a dried solid

form. Kosta et al. also discloses that the electrode has pores, therefore, the electrode is a solid porous mass comprising the aforementioned zinc particles (column 3 lines 1-13).

With regard to Claim 25, Une and Lin et al. disclose the method of forming an anode for a zinc/air cell of Claim 22 in paragraph 18 above, as well as, the dry powder mix of particulate zinc and the gallant being first placed into the anode casing and the electrolyte solution added after to form the wet anode mixture. Therefore, with regard to Claim 25, it would have been obvious to a person of ordinary skill in the art at the time of the invention to add the electrolyte after the solid porous mass of Kosta et al. has been inserted into the anode cavity of Une and Lin et al., because the addition of the second fluid of an aqueous alkaline electrolyte to the anode having a gelling agent therein will absorb the electrolyte and water and effectively swell upon the addition of the electrolyte. The resultant process will obviously result in an expansion of the anode.

With regard to Claim 28, Kosta et al. discloses the mass being shaped prior to introducing the mass into the drying oven (column 4 lines 1-12) and being passed through an oven to dry the mixture, thus the drying is performed by heating the mass (column 5 lines 10-12). Therefore, it would have been obvious to one of ordinary skill in the art to shape the mass of Une and Lin et al., prior to heating, because Kosta et al. teaches vaporizing the excess water from the binder and shaping the electrode prior to heating ensures the shape will remain so as to be able to fit in the anode cavity.

With regard to Claims 38 and 39, Kosta et al. discloses the mixture being stored in air and being molded into the shape of the anode cavity of the zinc/air cell (column 5 lines 6-8). Therefore, in providing a swelling agent to the anode afterward, it would

have been obvious to mold the anode into the shape of the anode cavity before inserting the anode into the zinc/air cell prior to the addition of the electrolyte solution into the anode. If the anode is inserted into the cell before the electrolyte is added, this optimizes the spatial relationship between the anode in the cell, as well, swelling of the anode predisposed in the cell improves contact between the anode, separator and cathode.

15. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Une (JP 56-116270) in view of Lin et al. (US 6,300,011 B1), as applied to Claims 22, 23, 26, 27 and 30-35 above, and in further view of Li (US 5,538,813).

Une and Lin et al. disclose the method of forming an anode for a zinc/air cell as described in paragraph 13 above, but do not disclose wherein the polyvinylalcohol has a molecular weight between about 85,000 and 146,000.

Li discloses that PVA binders are known in the art. PVA is commercially available in a wide range of molecular weights and it has been found that PVA obtained from Aldrich Chemical Company in the range of 80,000-140,000 molecular weight is a preferred material. It is to be understood that other molecular weights, such as in the range of 30,000-50,000 or 50,000-80,000 are also useful and other materials with even higher molecular weights may also be advantageously employed. Those of ordinary skill in the art of polymer science will readily understand that higher molecular weight polymers tend to be more structurally sound, whereas lower molecular weight polymers tend to be less rigid and more flexible (column 3 line 66 through column 4 line 8).

The selection of the desired MW of a PVA binder is dependent upon the extent to which the resultant structure is to be rigid or flexible.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Une by selecting the PVA molecular weight to be within a range from 30,000-140,000 or more or less dependent upon the desired degree of rigidity or flexibility of the resultant product. Generally, differences in ranges will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such ranges is critical. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). *In re Hoeschele*, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969). Furthermore to provide for the desired elastic solids taught by each of JP '690 and JP 1260, and in light of the teaching of Li with respect to how the molecular weight of PVA affects the flexibility/rigidity of a solidified object using PVA as a binder, one of ordinary skill in the polymer art would have recognized that PVAS having a MW between 85,000 and 146,000 would have provided suitable binder materials for the zinc anode to provide a molded solid having a degree of flexibility.

16. Claims 36 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Une (JP 56-116270) in view of Lin et al. (US 6,300,011 B1), as applied to Claims 22, 23, 26, 27 and 30-35 above, and in further view of Chalilpoyil et al. (US 5,401,590).

Une and Lin et al. disclose the method of forming an anode for a zinc/air cell described in paragraph 13 above, but do not disclose wherein the mixture further comprises a surfactant and said surfactant comprises an organic phosphate ester.

Chalilpoyil et al. discloses in column 5 lines 38-41, the use of a surfactant available under the designation GAFAC RA600 organic phosphate ester surfactant. The motivation for adding an organic phosphate ester surfactant to a zinc anode is to reduce hydrogen evolution at the anode. Therefore, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Kosta et al. by adding an organic phosphate ester surfactant to the zinc anode since it would have reduced the evolution of gases, such as hydrogen, at the anode. The selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in Sinclair & Carroll Co. v. Interchemical Corp., 325 U.S. 327, 65 USPQ 297 (1945) See also *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960). MPEP j 2144.07.

Double Patenting

17. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

18. Claims 1-39 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-41 of copending Application No. 10/613,686. Although the conflicting claims are not identical, they are not patentably distinct from each other.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

The claimed method of claims 1-39 of the instant application are further held to be obvious over claims 1-41 of copending Application No. 10/613,686. For those claims which positively give life to the types of cells, it is held that one of ordinary skill un the art would have recognized that the claimed invention, to a zinc/air cell having a zinc anode would have been directed to an alkaline cell.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karie O'Neill whose telephone number is (571) 272-8614. The examiner can normally be reached on Monday through Friday from 8am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Karie O'Neill
Examiner
Art Unit 1745

KAO

DAH-WEI YUAN
PRIMARY EXAMINER